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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/568,786	02/16/2006	Shiro Uchida	09792909-6622	6377

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EXAMINER
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NIU, XINNING

ART UNIT	PAPER NUMBER
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2828

MAIL DATE	DELIVERY MODE
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10/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/568,786	<b>Applicant(s)</b> UCHIDA ET AL.	
	<b>Examiner</b> Xinning(Tom) Niu	<b>Art Unit</b> 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 02/16/2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/16/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 7, 8, 13, 19, 20, 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyake (JP 11-251678).
3. Regarding claim 1, Miyake discloses: a substrate (2) ([0009]); a first conductive type first cladding layer (4) formed on said substrate ([0009]); an active layer (5) formed on said first cladding layer ([0009]); a second conductive type second cladding layer (8,9) formed on said active layer, a part thereof having a ridge-shaped portion as a current narrowing structure ([0009]); wherein said ridge shaped portion of said second cladding layer includes a first ridge shaped layer (8) on the side close to said active layer and having a high bandgap and a second ridge shaped layer (9) on the side distant from the active layer and having a low bandgap ([0009]). First ridge shaped layer (8) formed using AlGaInP at the given concentration inherently has a higher bandgap than AlGaInP at the given concentration.

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4. Regarding claim 7, Miyake discloses: etch stop layer (7) formed on a boundary face of a portion excepting the ridge shaped portion of said second cladding layer and said first ridge shaped layer ([0009]).

5. Regarding claim 8, Miyake discloses: first cladding layer, active layer and second cladding layer are formed by an AlGaInP based material (Figure 1, [0009]).

6. Regarding claim 13, Miyake discloses: a substrate (2) ([0009]); a first conductive type first cladding layer (4) formed on said substrate ([0009]); an active layer (5) formed on said first cladding layer ([0009]); a second conductive type second cladding layer (8,9) formed on said active layer, a part thereof having a ridge-shaped portion as a current narrowing structure ([0009]); wherein said ridge shaped portion of said second cladding layer includes a first ridge shaped layer (8) on the side close to said active layer and having a high bandgap and a second ridge shaped layer (9) on the side distant from the active layer and having a low bandgap ([0009]). First ridge shaped layer (8) formed using AlGaInP at the given concentration inherently has a higher bandgap than AlGaInP at the given concentration.

7. Regarding claim 19, please see the rejection for claim 7.

8. Regarding claim 20, Miyake discloses: forming ridge shaped portion by etching which stops at said etching stop layer ([0013]).

9. Regarding claim 21, please see the rejection for claim 8.

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 2-6, 9-12, 14-18, 22-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake (JP 11-251678).
12. Regarding claim 2, Miyake discloses the claimed limitations except first ridge shaped layer and second ridge shaped layer are a layer with a high aluminum composition ratio and a layer with a low aluminum concentration respectively. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aluminum concentration of each layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

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13. Regarding claim 3, Miyake discloses the claimed limitations except the aluminum composition ratio  $X_1$  of said first ridge shaped layer is between 0.6 and 0.7, and an aluminum composition ratio of  $X_2$  of said second ridge shaped layer is  $X_2 \leq X_1$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aluminum composition of each layer, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

14. Regarding claim 4, Miyake discloses the claimed limitations except an aluminum composition ratio  $X_1$  of said first ridge shaped layer is 0.7, and an aluminum composition ratio  $X_2$  of said second ridge shaped layer is 0.65. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a specific aluminum concentration for each layer, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

15. Regarding claim 5, Miyake discloses the claimed limitations except a film thickness of said first ridge shaped layer is 50 to 400 nm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thickness of the first ridge shaped layer, since it has been

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held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

16. Regarding claim 6, Miyake discloses the claimed limitations except a sum of a film thickness of a portion excepting said ridge-shaped portion of said second cladding layer and a film thickness of said first ridge shaped layer is 750 nm or smaller. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the thickness of the first ridge shaped layer and other layers below it, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

17. Regarding claim 9, Miyake discloses the claimed limitations except: wherein the first cladding layer, active layer and second cladding layer are formed by an AlGaIn based material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to AlGaIn instead of AlGaInP, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

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18. Regarding claim 10, Miyake discloses the claimed limitations except: wherein the first ridge shaped layer is formed by a layer having an equal refractive index to that of a portion excepting said ridge shaped portion of said second cladding layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the refractive index of the ridge layer in order to control the lateral mode of the laser device.

19. Regarding claim 11, Miyake discloses the claimed limitations except: wherein the first ridge shaped layer is formed by a layer having an lower refractive index to that of a portion excepting said ridge shaped portion of said second cladding layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the refractive index of the ridge layer in order to control the lateral mode of the laser device.

20. Regarding claim 12, Miyake discloses the claimed limitations except: wherein an aluminum composition ratio of said portion excepting said ridge-shaped portion of said second cladding layer is 0.68, and an aluminum composition ratio of said first ridge-shaped layer is 0.75 to 0.80. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aluminum concentration of the two ridge layers, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the



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optimum or workable ranges involves only routine skill in the art. *In re Aller*,  
105 USPQ 233.

21. Regarding claim 14, please see the rejection for claim 2.
22. Regarding claim 15, please see the rejection for claim 3.
23. Regarding claim 16, please see the rejection for claim 4.
24. Regarding claim 17, please see the rejection for claim 5.
25. Regarding claim 18, please see the rejection for claim 6.
26. Regarding claim 22, please see the rejection for claim 9.
27. Regarding claim 23, please see the rejection for claim 10.
28. Regarding claim 24, please see the rejection for claim 11.
29. Regarding claim 25, please see the rejection for claim 12.

**Conclusion**

30. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Takeuchi et al. (2004/0252739) disclose ridge waveguide laser with two ridge portions.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xinning(Tom) Niu whose telephone number is 571-270-1437. The examiner can normally be reached on M-T, 7:30-5:00 EST, Alternate Fridays 7:30-4:00 ES.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Min Sun Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Xinning Niu  
10/03/2007

